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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZIMMERMAN, JOHN J

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/055,301

Applicant(s)

SHEEK ET AL.

Examiner

John J. Zimmerman

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

FIRST OFFICE ACTION

Information Disclosure Statement

1. The Information Disclosure Statement received October 25, 2002 has been considered.

An initialed form PTO-1449 is enclosed with this Office Action.

Claim Objections

2. Claims 8 and 15 are objected to because of the following informalities: The spelling of "applied" should be corrected on the last line of claim 15.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Art Unit: 1775

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. For the purposes of claim interpretation in the following rejections, when article claims recite process limitations (e.g. see claims 10-11), when there is a substantially similar product, as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that the same process of making, see *In re Brown*, 173 U.S.P.Q. 685, and *In re Fessmann*, 180 U.S.P.Q. 324. Regarding claims requiring multiple functions of compositions, discovery of a new property or use of previously known composition, even if unobvious from the prior art, cannot impart patentability to claims to known composition, *In re Spada*, 15 USPQ2d 1655 (Court of Appeals, Federal Circuit 1990). A composition that is disclosed by applicant to be capable of multiple functions, would necessarily still retain those multiple functions whether recognized by the prior art to have those multiple functions. In any event, all the compositions of the applied prior art have inherently have multiple properties (e.g. corrosion resistance, color, ductility, hardness, barrier, etc. . .). Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Art Unit: 1775

In addition, while independent claim 1 recites that the composition varies from a "first" composition to a "second" composition, it allows for either the "first" or the "second" composition to increase as it gets further from the substrate. In addition, claim layers that do not actively use closed language (e.g. "consisting of") before the recitation of their compositions are interpreted to have open compositions (e.g. "comprising" - having the recited composition but also allowing for the inclusion of other constituents with the composition, *Ex parte Davis, et al.*, 80 USPQ 448 (PTO Bd. App. 1948)), since this is their broadest reasonable interpretation. See MPEP 2111.

5. Claims 1-4, 6-12, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Naik (U.S. Patent 4,919,773).

6. Naik discloses an article having a graded/transitioned layer from a layer of a metal to a hard outer layer compound of the metal, e.g. boride, carbide, nitride or oxide of a Group III to Group VI metal, (e.g. see paragraph spanning columns 6 and 7). A metallic interlayer, e.g. palladium, platinum, nickel, chromium, etc. . . , can used (e.g. see column 5, lines 17-40). The examples show the specific use of zirconium/zirconium nitride, hafnium/hafnium nitride and titanium/titanium nitride systems (e.g. column 7, lines 25-57).

7. Claims 1-2, 4-5, 9-10, 12-13, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Bergmann (U.S. Patent 4,403,014).

Art Unit: 1775

8. Bergmann discloses coating substrates with intermediate layers (e.g. column 8, lines 50-61) and either a continuous or stepped gradient (e.g. see Figure 9b for a continuous gradient and Figure 9c for a stepped gradient) of a noble metal (e.g. gold) and a metal compound (e.g. TiN, ZrN, etc. . .). The compositions are chosen for both color and hardness (e.g. column 3, line 62 - column 4, line 16).

9. Claims 1-2, 4-5, 7-8, 10-12, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang (UK Patent Application GB 2 284 431 A).

10. Bergmann discloses coating substrates with intermediate layers and continuous transition layer gradients using gold and TiN (e.g. see claim 1).

11. Claims 1-5, 7-12 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Randhawa (U.S. Patent 5,037,517).

12. Randhawa discloses an article having a transparent layer of about 25-50 angstroms and two graded/transitioned layers (e.g. see Figure 3; claims 1-9; column 3, line 67 - column 4, line 44). One composition can be gold and another layer can be zirconium and/or zirconium carbonitride (e.g. see Table I).

13. Claims 1, 2, 4, 6, 10, 12 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Schulz (EP Application 0 430 874 A1).

14. Schulz (e.g. Figures 1) discloses an article having a graded/transitioned layer (8) from a hard layer of TiN (6) and an isolating layer (9) of Al_2O_3 . The examiner notes that thin alumina layers are essentially transparent. In addition, the isolating layer passes into a transition layer (11) into aluminum (e.g. see second and third paragraphs on page 5 of the translation). The hard layer may also be the nitrides of zirconium and hafnium as well as chromium (e.g. see last paragraph on page 7 of the translation).

15. Claims 1, 2, 4, 5, 7-12, 14-15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasanuma (U.S. Patent 4,415,421).

16. Table 2 of Sasanuma (column 4, lines 15-45) shows good examples of layers of TiN and Au having a transition layer and also indications of color and wear resistant properties of the article. Figure 5 shows that the base is coated with essentially pure titanium with a region of increasing nitrogen content in the layer (TiN), followed by a relatively smooth transition zone of TiN→Au and an Au overcoat layer. Example III also shows zirconium and hafnium containing layers.

17. Claims 1, 4, 6, 10, 12, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Francois (U.S. Patent 4,973,388).

Art Unit: 1775

18. Francois discloses an article having a transition layer that varies from a first composition to a second composition of a predetermined color as the proportion of carbon, nitrogen, oxygen, etc. . . , is increased (e.g. see claim 1). Specific examples of gradients of Ti→TiN are given (e.g. column 4, lines 50-68).

19. Claims 1, 2, 6, 7, 10, 12, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Katsuhiko (Japanese publication 06-073530).

20. Katsuhiko discloses an article having a transition layer that varies from a first composition to a second composition, e.g. Al→Cr, (e.g. see paragraph [0008] and Table 1).

21. Claims 1, 2, 6, 7, 10, 13, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukutome (UK Patent Application GB 2 314 604 A).

22. Fukutome discloses an article having a stepped transition layer that varies from a first composition to a second composition, e.g. CrN₂→Cr, (e.g. see page 3, first two full paragraphs; Table 1 on page 17).

23. Claims 1, 2, 7, 8, 10-12, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Labib (U.S. Patent 5,426,000).

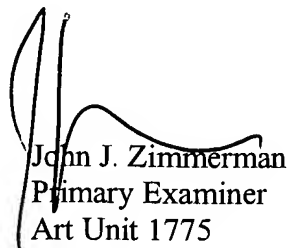
Art Unit: 1775

24. Labib discloses an article having a transition layer that varies from a first composition to a second composition. Specific examples of gradients of $\text{Ti} \rightarrow \text{TiN} \rightarrow \text{Ti}$ are given (e.g. column 4, lines 52-68).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (703) 308-2512. The examiner can normally be reached on 8:30am-5:00pm, M-F. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



John J. Zimmerman
Primary Examiner
Art Unit 1775

jjz
August 5, 2003